

A Nanotube Surface Reinforced Graphite Fiber Exhibiting Significantly Enhanced Properties, Phase I

Completed Technology Project (2006 - 2006)



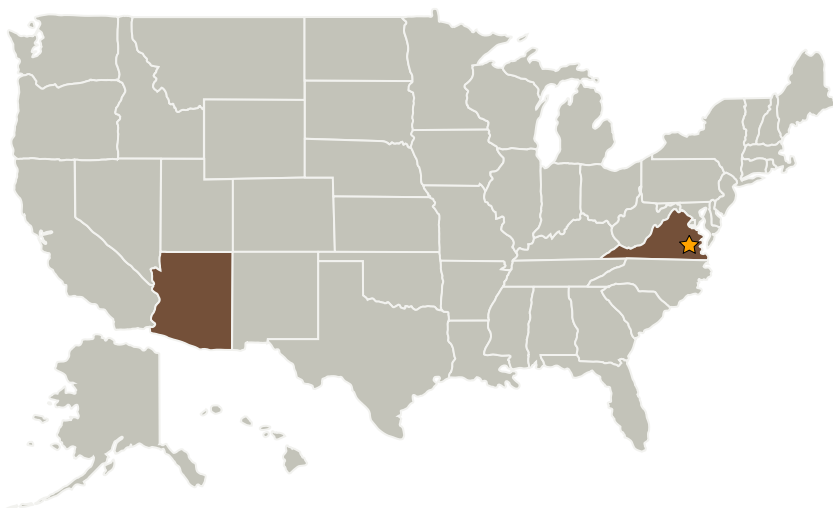
Project Introduction

Nanotechnology which includes carbon nanotubes has the potential to produce materials that exhibit properties beyond those expected from conventional materials which are anticipated to have a profound impact on NASA's future missions. Graphite fiber composites are multifunctional with high strength to weight ratios which form the basis of many aerospace systems. The combinations of carbon nanotubes with graphite fibers have the potential to significantly enhance fiber strength; offering significant advantages in multifunctional space flight applications. A unique approach will be utilized to incorporate carbon nanotubes onto existing graphite fibers to produce exemplary fiber strengths that will be utilized in composites with significantly higher strength to weight ratios. Nanotube reinforced graphite fibers will be produced and characterized in epoxy composites to demonstrate the expected property enhancements.

Anticipated Benefits

Potential NASA Commercial Applications: NON-NASA Ultra high strength graphite fibers have applications in pressure vessels for gas (H₂ and natural gas) storage in transportation, structures for bridge and building reinforcements and earth quake surviving, a variety of structures, defense applications and sporting goods/golf shafts, etc

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
MER Corporation	Supporting Organization	Industry	Tucson, Arizona

Primary U.S. Work Locations	
Arizona	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

James C Withers

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.1 Materials
 - └ TX12.1.1 Lightweight Structural Materials